



June 2016

DEFENSE HEALTH CARE

Availability and Quality Measurement of Women's Health Care Services in U.S. Military Hospitals

Why GAO Did This Study

DOD provides health care services to active-duty servicemembers, their dependents, and others, in part through direct care provided at military hospitals and clinics located on military bases. Women represent a significant percentage of the population eligible for MHS services, comprising nearly half of the 7 million adults eligible for coverage at the end of fiscal year 2014.

In recent years, DOD's study of the quality of care in the MHS raised questions about the quality of health care at military hospitals, including the quality of women's health care services. The Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 included a provision for GAO to describe the availability of women's health care services at military hospitals, particularly maternity care, and the measurement and monitoring of the quality of these services.

This report describes: (1) the extent to which women's health care services are available to servicemembers and other beneficiaries at domestic military hospitals; (2) how the MHS selects quality measures for women's health care services provided at military hospitals; and (3) the quality measures that the MHS has selected for women's health care services and how they are used to improve the quality of care. GAO reviewed documentation, information, and data provided by DOD and the military services, on women's health care services available as of July 2015, and interviewed officials from DOD, the military services and NCR, and six hospitals (selected based on military service, geographic diversity, and volume of deliveries).

View [GAO-16-596](#). For more information, contact Debra A. Draper at (202) 512-7114 or draperd@gao.gov.

DEFENSE HEALTH CARE

Availability and Quality Measurement of Women's Health Care Services in U.S. Military Hospitals

What GAO Found

Almost all of the domestic military hospitals in the Department of Defense's (DOD) Military Health System (MHS) offered general women's health care services, including general maternity, neonatal, and gynecological care, with fewer offering specialty care services. Specifically, according to officials from the three military services and the National Capital Region (NCR) (which includes two military hospitals in the Washington, D.C. area), 37 of the 41 domestic military hospitals offered a basic or specialized level of maternity and neonatal care services, although fewer offered more specialized levels of these services. All of the 41 hospitals offered general gynecological care, including contraceptive services and cervical cancer screenings, while fewer offered more specialized care, such as treatment for gynecological cancers, according to officials.

According to MHS officials, the MHS selects quality measures for women's health care services based on assessments and input from advisory groups at multiple levels of the MHS, including at the department, military service, and hospital levels. Members of these advisory groups participate in the activities of national clinical organizations and educate their colleagues within the MHS about new developments in health-care quality assessment, including new quality measures. According to officials from the MHS and all three services and NCR, coordination of the selection of quality measures for women's health care services across the military services and NCR has increased in the past several years, including for the selection of measures to include in a perinatal quality measures "dashboard," which is being developed to provide more timely quality information to providers during the patient's stay in the hospital.

In 2015, the MHS collected data for 90 quality measures related to maternity, neonatal, and gynecological care, a number of which related to areas that had been identified nationally as being problematic and associated with high rates of maternal morbidity. In maternity and neonatal care, for example, data was collected on elective deliveries (where the birth is facilitated, such as with medication or surgical cesarean section, without a medical indication). For gynecological care, the MHS collected data for quality measures related to prevention, such as screenings for breast and cervical cancer, and gynecological surgery, such as morbidity rates within 30 days following surgery. The MHS, the military services and NCR, and individual military hospitals used the data collected to identify areas for quality improvement and implement related improvement activities. For example, MHS officials told GAO that the MHS's 2015 Perinatal Quality Initiative was implemented across all military hospitals in response to a finding that postpartum hemorrhage rates were higher in military hospitals compared to certain civilian hospitals. This initiative included training for hospital staff, clinical simulation drills, and using quality tools to help providers prepare for and carry out steps to minimize the risk and negative outcomes of the condition. Officials reported that after implementation of the initiative, postpartum hemorrhage rates decreased, on average, across the MHS.

GAO is not making recommendations in this report. DOD reviewed a draft of this report and provided technical comments, which GAO incorporated as appropriate.

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Abbreviations

AAP	American Academy of Pediatrics
ACOG	American College of Obstetricians and Gynecologists
ACS	American College of Surgeons
AHRQ	Agency for Healthcare Research and Quality
CMWG	Clinical Measures Working Group
CQIB	Clinical Quality Integration Board
DHA	Defense Health Agency
DOD	Department of Defense
HEDIS	Healthcare Effectiveness Data and Information Set
IHI	Institute for Healthcare Improvement
IUD	intrauterine device
MDC	Major Diagnostic Categories
MHS	Military Health System
NCQA	National Committee for Quality Assurance
NCR	National Capital Region
NPIC	National Perinatal Information Center
NQF	National Quality Forum
NSQIP	National Surgical Quality Improvement Program
PAG	Perinatal Advisory Group

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June 23, 2016

The Honorable John McCain
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Mac Thornberry
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

Women represent a significant percentage of the population served by the Department of Defense's (DOD) Military Health System (MHS); as of the end of fiscal year 2014, nearly 3.5 million of the 7 million adults eligible for coverage in the MHS were women. This system provides a full range of health care services to active-duty military servicemembers, their dependents, and others, through both direct care (provided at military hospitals and clinics located on military bases), as well as through care purchased from civilian health care facilities. While the system as a whole provides a full range of health care services, the specific services available at each military hospital (including women's health care services) vary depending in part on hospital size and staffing levels.¹

When needed health care services are not available at a military hospital, the patient is referred to either another military hospital or a civilian hospital for care.

¹For the purposes of this report, women's health care services include maternity, neonatal, and gynecological care services. Maternity care includes prenatal care provided to the mother before birth, care provided during labor and delivery, and post-natal care after birth. Neonatal care refers to care provided to the newborn. Some organizations also use the term perinatal to refer to both maternity and neonatal care. Gynecological care is used to refer to other women's health care services, including preventive screenings, such as mammography, and the treatment of diseases and conditions of the female reproductive system.

In recent years, questions have been raised about the quality of care, including women's health care, provided at military hospitals. For example, in 2014, DOD conducted a study of the quality of care in the MHS, and found significant variability in the performance of military hospitals on certain measures of quality related to maternity, neonatal, and gynecological care.² The study also found that military hospitals had comparatively poorer performance on some of these measures than other health care systems, and raised questions about the consistency of care in the MHS.³

According to health care researchers, for any health system—including the MHS—assessing the quality of care provided in its hospitals is key to identifying potential problems and then to taking the appropriate steps to mitigate the risks to patients. For example, to ensure that women receive high-quality health care, it is essential that health systems such as the MHS select and systematically monitor relevant quality measures. Moreover, researchers also note that it is important that the measures selected are based on a hospital's particular care delivery practices and needs, which may change over time in response not only to changes in the needs of an individual hospital, but also to evolving national trends in clinical care.⁴

The Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 included a provision for GAO to describe the availability of women's health care services at military

²Department of Defense, *Final Report to the Secretary of Defense, Military Health System Review* (August 2014). In addition to this review, a series of articles in *The New York Times* in 2014 and 2015 raised questions about the quality of women's health care services provided at military hospitals; see S. LaFraniere and A. Lehren, "In Military Care, a Pattern of Errors but Not Scrutiny," *The New York Times*, June 28, 2014; S. LaFraniere, "Military Hospital Care Is Questioned; Next Reprisals," *The New York Times*, Dec. 20, 2014; S. LaFraniere, "Service Members Are Left in Dark on Health Errors," *The New York Times*, Apr. 19, 2015.

³Geisinger Health System, Intermountain Healthcare, and Kaiser Permanente were chosen for the purpose of comparing the Military Health System against systems of similar size and scope of care.

⁴Quality measures for women's health care services may address such things as the extent to which a hospital provides patients with appropriate care, for example, screening for cervical cancer; or the extent to which a hospital's care results in adverse outcomes for patients, for example, infection following gynecological surgery.

hospitals, particularly maternity care, and the measurement and monitoring of the quality of these services. In this report, we describe: (1) the extent to which women's health care services are available to servicemembers and other covered beneficiaries at military hospitals; (2) how the MHS selects quality measures for women's health care services provided at military hospitals; and (3) the quality measures the MHS has selected for women's health care services, and how, if at all, they are used to improve the quality of care for its beneficiaries.

To describe the extent to which women's health care services are available to members of the military services and other beneficiaries at military hospitals, we obtained data and information in July 2015 about the women's health care services provided at each domestic military hospital.⁵ Specifically, we obtained from the military services (Army, Navy, and Air Force) and the National Capital Region (NCR) information about the levels of maternity and neonatal care provided at each hospital.⁶ The levels of maternity and neonatal care ranged from the most basic (Level I) to the most specialized (Level IV).⁷ In addition, we obtained information on the availability at each hospital of certain general gynecological services, and specialized services associated with the treatment of gynecological cancers.⁸ We also interviewed officials from

⁵For the purposes of this report, we limited our scope to domestic military hospitals, which include those in the continental U.S., Alaska, and Hawaii.

⁶The NCR was created in 2013 so that one entity, the National Capital Region Medical Directorate, would have oversight over all the military treatment facilities in the Washington, D.C. area, including two hospitals.

⁷The levels of maternity care were defined by the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine in: *Obstetric Care Consensus: Levels of Maternal Care* (Washington, D.C. 2015). The levels of neonatal care were defined by the American Academy of Pediatrics in: "Levels of Neonatal Care," *Pediatrics*, vol. 130, issue 3 (2012).

⁸The general gynecological services we examined for availability included contraceptive services and cervical cancer, mammography, and osteoporosis screenings. The specialty gynecological services we examined included surgical, medical, and radiation treatments for gynecological cancers. These services were selected based on the health care services included in a 2013 GAO survey of 27 domestic Army installations. (See GAO, *DOD Health Care: Domestic Health Care for Female Servicemembers*, [GAO-13-205](#) (Washington, D.C.: Jan. 29, 2013).) That survey focused on general and specialty health care services identified by Army health care providers as services that should be available to female servicemembers. Throughout this report we refer to all of these health care services collectively as gynecological care services.

the military services and NCR about referrals of women to other hospitals when needed services were not available. Further, we obtained data from the MHS on the number of women, aged 18 or older, served in fiscal year 2014, including the number of inpatient hospitalizations and the number of hospitalizations specifically related to maternity and reproductive health. We reviewed related documentation about these data, interviewed knowledgeable MHS officials, and determined that these data were sufficiently reliable for the purposes of our reporting objective.

To describe how the MHS selects quality measures for women's health care services, we analyzed related policies used by DOD, including the MHS and each of the military services and NCR, and interviewed officials representing each to learn about quality measure selection, and how information is shared among different levels within the MHS. In addition, we conducted site visits to six military hospitals selected to ensure we included those representing each of the three military services, as well as a mix of urban and rural geographic locations, and variation in the number of deliveries. At each of these hospitals, we conducted interviews with: the hospital's leadership; clinical leadership for women's health care services; clinical providers such as obstetricians, certified nurse midwives, and nurses; and quality management staff. Through these interviews, we obtained information about the role of military hospitals in selecting quality measures. Because the hospitals we visited were not selected randomly, they do not constitute a representative sample of all domestic military hospitals, and the information obtained from these interviews cannot be generalized to other hospitals. We also interviewed representatives of national health care quality organizations about the processes that other hospital systems use to select quality measures.⁹

To describe the quality measures that the MHS has selected and how, if at all, these measures are used to assess and improve the quality of care, we reviewed documentation about which quality measures the MHS, the military services, and NCR selected, and interviewed officials representing each about how they use the measures to assess and improve the quality of women's health care services. We also conducted a literature search and interviewed representatives of national

⁹We interviewed representatives of the Institute for Healthcare Improvement, The Joint Commission, and the National Quality Forum.

organizations that focus on women's health to gain an understanding of what types of quality measures are available and how they are used.¹⁰ We also interviewed officials at the hospitals we visited and obtained information about how hospital officials and staff use the measures to assess and improve the quality of women's health care services at the hospital level. For the purposes of this report, we focused on two types of quality measures—process measures and outcome measures—that are designed specifically for clinical services and medical conditions related to women's health care.¹¹

We conducted this performance audit from May 2015 to June 2016 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings based on our audit objectives.

Background

The Military Health System

The MHS is operated through collaboration between the military services, the Office of the Assistant Secretary of Defense for Health Affairs, and the Defense Health Agency (DHA).¹² The MHS governance structure includes representatives from each of the military services and DOD. Within this structure, the Medical Operations Group oversees the provision of health care services, including the oversight of health care quality. (For additional information about the MHS governance structure, see appendix I.)

¹⁰We interviewed representatives of the American College of Obstetricians and Gynecologists; the Association of Women's Health, Obstetric and Neonatal Nurses; and the National Perinatal Information Center.

¹¹Process measures may, for example, examine whether a certain clinical test is performed, while outcome measures may, for example, identify whether a patient had an infection following surgery.

¹²DHA is an agency established by DOD in 2013 as part of the re-organization of the military health system to achieve greater integration of shared services and to coordinate some of the activities of the military services' hospitals and clinics.

In 2015, the MHS’s direct care system included 41 domestic military hospitals across the military services and the NCR.¹³ These hospitals varied widely in the number of inpatient beds—a general indicator of hospital size and scope of services—with the majority of these hospitals being relatively small, having 50 or fewer inpatient beds.¹⁴ (See table 1.) The hospitals spanned the country from very populated areas, such as the Washington, D.C. region, to very remote areas, such as the Mojave Desert region in southeastern California. (See appendix II for the location of domestic military hospitals.)

Table 1: Number of Domestic Military Hospitals by Number of Inpatient Beds, Reported by Each Military Service and the National Capital Region, as of July 2015

Military service	0-25 beds	26-50 beds	51-100 beds	101+ beds	Total
Army	8	4	3	5	20
Navy	6	2	1	2	11
Air Force	2	1	4	1	8
National Capital Region (NCR) ^a	0	0	0	2	2
Total	16	7	8	10	41

Source: Army, Navy, Air Force, and NCR. | GAO-16-596

Note: These data include Naval Hospital Lemoore, which does not have any inpatient beds.

^aThe NCR was created by the Defense Health Agency in 2013 so that one entity, the National Capital Region Medical Directorate, would have oversight over all the military treatment facilities, including two hospitals, in the Washington, D.C. area.

Women represent a large share of the population eligible for MHS services. For example, as of the end of fiscal year 2014, 49 percent of all eligible MHS health care beneficiaries aged 18 or older were female, and among active-duty servicemembers and their dependents served by the MHS, females represented 43 percent. (See table 2.)

¹³The Navy also includes the Marines.

¹⁴Number of inpatient beds is a general indicator of hospital size and scope of services. Among U.S. community hospitals, 57 percent had from 50 to 399 beds and 34 percent had fewer than 50 beds in 2014, the most recent year for which data are available.

Table 2: Number of Eligible Department of Defense Health Care Beneficiaries Aged 18 or Older by Type and Gender, as of the End of Fiscal Year 2014

Beneficiary type	Total	Males		Females	
	Number	Number	Percent of total	Number	Percent of total
Active duty and their dependents	2,215,096	1,257,800	57%	957,296	43%
Retirees and their dependents, and other ^a	4,869,473	2,328,081	48	2,541,392	52
Total	7,084,569	3,585,881	51	3,498,688	49

Source: GAO analysis of Defense Health Agency data. | GAO-16-596

^aThere are about 4 million retirees and their dependents, and about 850,000 other beneficiaries, the latter of which includes such groups as inactive National Guard and Reserve members, dependent survivors, and members of the U.S. Public Health Service.

Health care services for women represent a significant percentage of the care provided by domestic military hospitals. For example, in fiscal year 2014, maternity and neonatal care services—as represented by the two major diagnostic categories related to 1) pregnancy and childbirth and 2) newborns—accounted for the largest and the second largest number of direct-care hospitalizations reported across all domestic military hospitals. These two categories combined represented about 40 percent of hospitalizations. (See table 3.)

Table 3: Top Five Reported Major Diagnostic Categories (MDCs) for All Inpatient Hospitalizations across Domestic Military Hospitals, Fiscal Year 2014

MDC	MDC description	Total number of hospitalizations	Percent of total hospitalizations
14	Pregnancy, childbirth, and puerperium ^a	49,544	20.7%
15	Newborns and other neonates with conditions originating in perinatal period	46,989	19.7
05	Diseases and disorders of the circulatory system	21,126	8.8
06	Diseases and disorders of the digestive system	17,375	7.3
08	Diseases and disorders of the musculoskeletal system and connective tissue	16,070	6.7

Source: GAO analysis of Defense Health Agency data. | GAO-16-596

Note: Total number of inpatient hospitalizations includes all patients, both active-duty servicemembers and other beneficiaries, both female and male, across all age groups.

^aPuerperium is the period after childbirth during which the mother's reproductive organs return to their original non-pregnant condition.

Using Quality Measures to Assess and Improve Women's Health Care Services

Recommendations to improve the quality of care at hospitals—including both civilian and military hospitals—are generally developed after assessing care over time using various quality measures. Over the past two decades, based on such assessments, health services researchers and national organizations that focus on women's health, among others, have identified areas of concern related to women's health care services in U.S. hospitals. Those findings have led to recommended changes in clinical practice to achieve better outcomes. For example, researchers found that there were increasing rates of elective cesarean sections—surgeries for which there is no clear medical indication that a cesarean section is necessary—and that this clinical practice may be associated with increased rates of morbidity for both the mother and baby. In response to this finding, the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine issued a recommendation that obstetricians only perform cesarean sections when there is a medical indication for them. In addition, in response to findings of increased rates of postpartum hemorrhage and other types of maternal morbidity, the National Partnership for Maternal Safety, which started as a collaborative effort of more than 25 organizations including national women's health organizations, has developed resources—such as recommended checklists and other clinical decision-making tools—to help providers prevent common causes of postpartum hemorrhage and other types of maternal morbidity.¹⁵

Health systems and hospitals use quality measures to assess performance relative to national recommendations and compared to other systems and hospitals. Each health system and hospital may select from a variety of measures for women's health care services to assess the quality of care they provide, and to initiate efforts to improve the delivery of care. Among those measures, process measures may examine whether a certain service is performed, while outcome measures may

¹⁵Postpartum hemorrhage is excessive bleeding of the mother following birth.

identify the result of treatment.¹⁶ Some quality measures for women’s health care services have been developed, endorsed, recognized, or used by relevant national organizations.¹⁷ (See table 4 for examples of key national organizations with roles in health care quality measurement.) Quality measures for women’s health care services that are used or recognized by national organizations have changed over time and continue to evolve.¹⁸

Table 4: Key National Organizations That Develop, Endorse, Recognize, or Use Quality Measures, Including Measures for Women’s Health Care Services

National organization	Description
Agency for Healthcare Research and Quality (AHRQ)	The Department of Health and Human Services’ AHRQ maintains the National Quality Measures Clearinghouse, which includes measures that are submitted to it by many different measure developers or sponsors, including government agencies, accrediting bodies, research institutions, professional societies, and individual hospitals and health systems. In addition, AHRQ has developed Quality Indicators, a set of measures for hospitals that is based on readily available administrative data. ^a
American College of Surgeons (ACS)	ACS, a medical specialty society, oversees the National Surgical Quality Improvement Program, which uses measures that focus on complications or unintended events that occur within a 30-day period following hospitalization for different types of surgery—including gynecology surgery—such as morbidity, mortality, or readmission to the hospital.
Institute for Healthcare Improvement (IHI)	IHI, a not-for-profit organization, uses assessments of quality measures to develop and promote innovative approaches to improving patient care, including the development of tools to improve quality of women’s healthcare services. IHI collaborates with health care providers to implement quality improvement.

¹⁶For instance, the process measure “antenatal steroids” indicates whether providers used antenatal steroids to prevent preterm delivery. The outcome measure “incidence of postpartum hemorrhage” indicates the percentage of deliveries that involve excessive bleeding.

¹⁷Hospitals may also use measures they develop on their own.

¹⁸For example, the National Quality Forum (NQF), which assesses quality measures against certain criteria, first endorsed a set of perinatal measures in 2003. Perinatal care refers to both maternity care, which includes care provided to the mother before birth, care provided during labor and delivery, and care provided after birth; and neonatal care, which is care provided to the newborn. NQF conducted a second review in 2008 and a third in 2012, each of which resulted in the addition and removal of certain measures. As of May 2016, NQF was conducting its fourth review of perinatal measures. Further, questions have been raised about the validity of certain widely used measures. For example, in 2014, researchers raised questions in a scientific journal about whether two commonly used obstetric quality measures—elective delivery before 39 weeks of gestation and cesarean section delivery performed on low-risk mothers—were accurate indicators of maternal morbidity on their own without additional information.

The Joint Commission	The Joint Commission is a national not-for-profit hospital-accrediting body that requires hospitals to submit quality data, and to meet other specified standards to receive accreditation and certification. The Joint Commission's measure set for perinatal care is required for hospitals with a certain number of births annually. ^b
National Committee for Quality Assurance (NCQA)	NCQA, a national not-for-profit accrediting organization, develops and maintains the Healthcare Effectiveness Data and Information Set (commonly referred to as HEDIS), which is a widely used set of health care performance measures and includes measures of preventive services for women such as screening for breast and cervical cancer and certain sexually transmitted diseases.
National Perinatal Information Center (NPIC)	NPIC is a not-for-profit organization with expertise in the analysis of large data sets and development of comparative benchmarking quality measures, particularly for perinatal care. ^b
National Quality Forum (NQF)	NQF, a not-for-profit organization, evaluates health care performance measures for multiple clinical areas including perinatal care by using a consensus development process to assess and endorse measures submitted by measure developers. ^b

Source: AHRQ, ACS, IHI, The Joint Commission, NCQA, NPIC, and NQF. | GAO-16-596

^aAdministrative data refers to information that is readily available through insurance enrollment files and provider claims.

^bPerinatal care refers to both maternity care, which includes care provided to the mother before birth, care provided during labor and delivery, and care provided after birth; and neonatal care, which is care provided to the newborn.

Health systems and hospitals—including both military and civilian hospitals—generally develop improvement strategies based on their performance on selected quality measures. Quality improvement involves making systemic changes within an organization often requiring multiple types of change, such as using new quality tools, training health care professionals, and improving coordination among clinical providers. These approaches are aimed at making recommended changes in clinical practice. Within the MHS, resources are available to military hospitals for conducting quality improvement activities, including for women's health care services, such as training in systems aimed at optimizing patient care by improving communication and teamwork skills among health care professionals. In addition, each of the military services has policies in place requiring hospitals to conduct quality improvement activities.

Almost All Domestic Military Hospitals Offered General Women's Health Care Services, with Fewer Offering Specialty Care Services

As of July 2015, almost all of the 41 domestic military hospitals offered a basic or higher level of maternity and neonatal care services, although fewer offered more specialized levels of these services, according to military-service and NCR officials. All 41 hospitals offered general gynecological care, including contraceptive services and cervical cancer screenings, while fewer hospitals offered more specialized gynecological care, such as treatment for gynecological cancers. When needed women's health care services for active duty military servicemembers are not available at a military hospital, the provider is to try first to refer the patient to another military hospital.

Levels of Maternity Care

Levels of specialization in maternity care are defined by the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine, organizations that are nationally recognized for setting standards for maternity care. The levels of maternity care indicate the levels of specialization of care by labor and delivery service capabilities, types of health care providers available at the facility, and types of patients and medical cases that would be appropriate to treat at the facility. The levels are as follows:

- Level I: Hospitals that have obstetricians and gynecologists and are capable of handling uncomplicated pregnancies.
- Level II: Hospitals that can treat certain high-risk pregnancies and have specialists available for consultations.
- Level III: Hospitals that have maternal fetal medicine subspecialists available at all times in addition to obstetricians and gynecologists and can handle complex maternal medical conditions, obstetrical complications, and fetal conditions.
- Level IV: Hospitals that offer the highest level of specialization of maternity care and can handle the most complex maternal conditions, and critically ill pregnant women and fetuses throughout the pregnancy.

Source: ACOG, Society for Maternal-Fetal Medicine. | GAO-16-596

Maternity Care Services. According to officials from the three military services and NCR, as of July 2015, 37 of the 41 domestic military hospitals offered maternity care services, with most hospitals offering either a basic level or specialized level of care (levels I and II), and fewer offering maternity care at subspecialty or higher levels (level III or higher). Specifically, they reported that 16 of the 37 domestic military hospitals that offered maternity care offered only a basic level of care (level I), 13 offered a specialty level of care (level II), 5 offered a more specialized subspecialty level of care (level III), and 3 were considered even further specialized regional perinatal health care centers with full maternity care capabilities (level IV). (See table 5 for the number of military hospitals by levels of maternity care.)

Table 5: Number of Domestic Military Hospitals by Level of Maternity Care, Reported by Each Military Service and the National Capital Region, as of July 2015

Level of maternity care ^a	Army (n=20)	Navy (n=11)	Air Force (n=8)	National Capital Region (NCR ^b) (n=2)	Total (n=41)
No labor and delivery services	2	2	0	0	4
Level I: Basic care	9	2	5	0	16
Level II: Specialty care	4	5	3	1	13
Level III: Subspecialty care	2	2	0	1	5
Level IV: Regional perinatal health care center ^c	3	0	0	0	3

Source: Army, Navy, Air Force, and NCR. | GAO-16-596

Notes: These data include Naval Hospital Lemoore, which does not have any inpatient beds.

According to officials from all three military services and NCR, when needed women's health care services are not available at a particular military hospital, patients are referred to another hospital.

^aThe levels of care range from the most basic at Level I to the most specialized at Level IV as defined in the American College of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine's: Obstetric Care Consensus: Levels of Maternal Care (Washington, D.C.: 2015).

^bThe NCR was created by the Defense Health Agency in 2013 so that one entity, the National Capital Region Medical Directorate, would have oversight over all the military treatment facilities, including two hospitals, in the Washington, D.C. area.

^cPerinatal care refers to both maternity care, which includes care provided to the mother before birth, care provided during labor and delivery, and care provided after birth; and neonatal care, which is care provided to the newborn.

Levels of Neonatal Care

The levels of specialization in neonatal care are defined by the American Academy of Pediatrics (AAP), an organization that is nationally recognized for setting standards for neonatal care. The levels of neonatal care indicate the levels of specialty care and increase in specialization at each level. AAP defines the levels by the availability of appropriate personnel, physical space, equipment, and technology. The levels are as follows:

- Level I: Hospitals that have pediatricians and family physicians, and can handle low-risk infants and care for preterm infants born at 35 to 37 weeks.
- Level II: Hospitals that have specialists such as neonatologists and can care for moderately ill newborn infants who are born as early as 32 weeks.
- Level III: Hospitals that have additional specialists, including pediatric anesthesiologists and pediatric surgeons, and can care for infants who are born at less than 32 weeks with medical or surgical conditions.
- Level IV: Hospitals that have a range of specialists, including pediatric surgical subspecialists, as well as neonatal intensive care units and can treat the most complex cases.

Source: AAP. | GAO-16-596

Neonatal Care Services. As of July 2015, most domestic military hospitals offered neonatal care services, with the majority offering only basic well newborn nursery (level I), and fewer offering more specialized neonatal intensive care units (level II or higher), according to officials from the military services and NCR. Specifically, they reported that 37 of the 41 domestic military hospitals offered neonatal care services. Of these 37 hospitals, officials noted that 23 offered level I neonatal care services, 7 offered level II, 7 offered level III, and none offered level IV. (See table 6 for the number of domestic military hospitals by level of neonatal care.)

Table 6: Number of Domestic Military Hospitals by Level of Neonatal Care, Reported by Each Military Service and the National Capital Region, as of July 2015

Level of neonatal care ^a	Army (n=20)	Navy (n=11)	Air Force (n=8)	National Capital Region (NCR ^b) (n=2)	Total (n=41)
Neonatal services not offered	2	2	0	0	4
Level I: Well newborn nursery	10	6	7	0	23
Level II: Special care nursery	4	1	1	1	7
Level III: Neonatal intensive care unit	4	2	0	1	7
Level IV: Regional neonatal intensive care unit	0	0	0	0	0

Source: Army, Navy, Air Force, and NCR. | GAO-16-596

Notes: These data include Naval Hospital Lemoore, which does not have any inpatient beds.

According to officials from all three military services and NCR, when needed women's health care services are not available at a particular military hospital, patients are referred to another hospital.

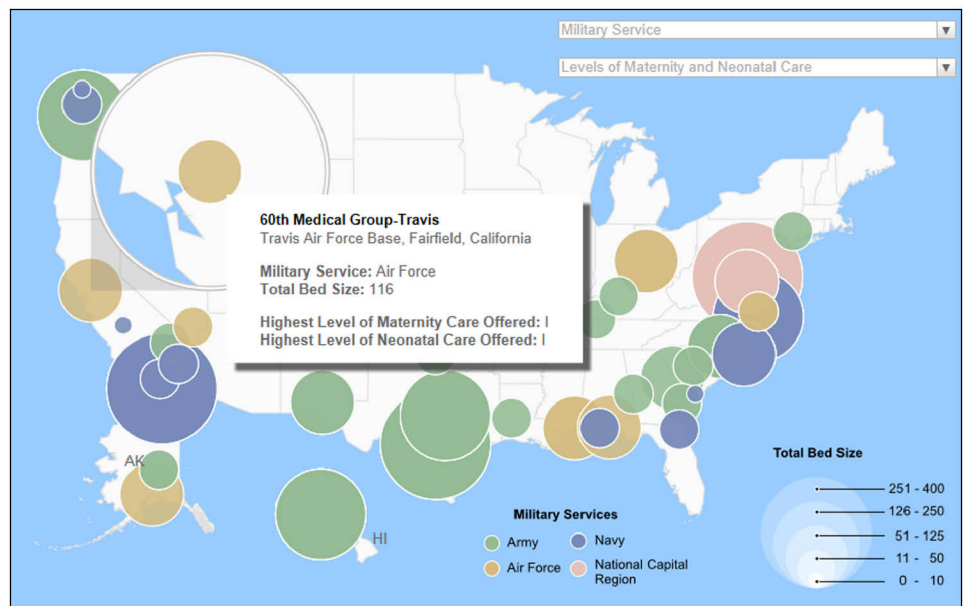
^aThe levels of care range from the most basic at Level I to the most specialized at Level IV as defined in: American Academy of Pediatrics, "Levels of Neonatal Care," Pediatrics, vol. 130, issue 3 (2012).

^bThe NCR was created by the Defense Health Agency in 2013 so that one entity, the National Capital Region Medical Directorate, would have oversight over all the military treatment facilities, including two hospitals, in the Washington, D.C. area.

In general, hospitals with more specialized levels of maternity and neonatal care tended to be larger, whereas those hospitals that offered only basic levels of maternity and neonatal care tended to be smaller. In the interactive graphic linked to below, we provide a map that shows the location of each domestic military hospital, as well as each hospital's total bed size and the highest levels of maternity and neonatal care services offered. (See figure 1 for an illustration of maternity and neonatal care

services provided by domestic military hospitals via the interactive map available at the website.)

Figure 1: Illustration of Map of Domestic Military Hospitals Offering Maternity and Neonatal Care Services, by Level of Care, Reported by Each Military Service and the National Capital Region (NCR), as of July 2015



Source: Army, Navy, Air Force, and NCR (information); GAO (illustration). | GAO-16-596

Notes: The NCR was created by the Defense Health Agency in 2013 so that one entity, the National Capital Region Medical Directorate, would have oversight over all the military treatment facilities, including two hospitals, in the Washington, D.C. area.

These data include Naval Hospital Lemoore, which does not have any inpatient beds.

The interactive version of this map can be viewed at <http://www-dev.gao.gov/products/GAO-16-596>.

Gynecological Care Services. For the gynecological care services included in our review, most domestic military hospitals offered general gynecological care, and fewer offered more specialized care. Specifically, officials from the three military services and NCR reported that all 41 hospitals offered contraceptive services, including contraceptive counseling and intrauterine device (IUD) insertion and removal, all 41 offered cervical cancer screenings to check for changes in the cells of the cervix that could lead to cancer, and 38 offered mammography

screenings to check for breast malignancies.¹⁹ Fewer, 30 of the 41 hospitals, offered osteoporosis screenings to check bone density, according to officials.²⁰

Although most domestic military hospitals offered general gynecological care, far fewer offered more specialized care, particularly surgical, medical, and radiation treatment for gynecological cancers, such as ovarian, cervical, and uterine cancer. Specifically, officials from the three military services and NCR reported that 14 of the 41 hospitals offered surgical treatment for gynecological cancers, 12 offered medical treatment, and 9 offered radiation treatment. (See table 7.)

Table 7: Number of Domestic Military Hospitals That Offered Selected Gynecological Care Services, Reported by Each Military Service and the National Capital Region, as of July 2015

Selected health care services	Army (n=20)	Navy (n=11)	Air Force (n=8)	National Capital Region (NCR ^a) (n=2)	Total (n=41)
Contraceptive services ^b	20	11	8	2	41
Cervical cancer screening	20	11	8	2	41
Mammography screening	19	10	7	2	38
Osteoporosis screening	15	7	6	2	30
Surgical treatment of gynecological cancers ^c	9	3	1	1	14
Medical treatment of gynecological cancers ^c	8	2	1	1	12
Radiation treatment of gynecological cancers ^c	4	2	2	1	9

Source: Defense Health Agency, Army, Navy, Air Force, and NCR data. | GAO-16-596

Notes: These data include Naval Hospital Lemoore, which does not have any inpatient beds.

According to officials from all three military services and NCR, when needed women's health care services are not available at a particular military hospital, patients are referred to another facility.

^aThe NCR was created by the Defense Health Agency in 2013 so that one entity, the National Capital Region Medical Directorate would have oversight over all the military treatment facilities, including two hospitals, in the Washington, D.C. area.

^bContraceptive services include contraceptive counseling and intrauterine device (IUD) insertion and removal.

^cThe term gynecological cancers refers to ovarian, cervical, and uterine cancer.

¹⁹An intrauterine device (IUD) is a form of contraception.

²⁰Osteoporosis screening is a service provided to both men and women. It is included here because it is often part of gynecological care.

Referrals for Women’s Health Care Services. When needed women’s health care services for active duty military servicemembers are not available at a military hospital, the provider is to try first to refer the patient to another military hospital (keeping the patient in the direct care system).²¹ Military service and military hospital officials told us that this was done in order to facilitate continuity of care. Officials from the three services and NCR told us that because all military hospitals use the same electronic health records system, a referral within the direct care system helps facilitate continuity of care, because the receiving military hospital automatically has access to the patient’s health records. Officials at one hospital we visited also noted that referrals within the direct care system are less expensive than purchasing care from civilian hospitals. If the patient cannot be referred to another military hospital (for example, because there are none nearby with the capacity or services needed), the provider will make a referral to a civilian hospital through the purchased care system. In this case, medical records are provided to the patient to take with her to the receiving hospital, and with patient approval, faxed to the receiving civilian hospital.²²

Regardless of whether the referral is made through the direct care or purchased-care system, the extent of communication with the receiving hospital about the referral often depends on the acuity of the case, according to military service officials. For example, in cases such as a complicated pregnancy or a preterm infant, the provider will typically call

²¹The MHS provides active duty military servicemembers with coverage called Tricare Prime. Other beneficiaries, such as family of servicemembers, may choose to enroll in Tricare Prime or they may participate in other coverage options provided through the MHS. When a referral to another facility is needed for individuals enrolled in Tricare Prime, the MHS first tries to identify a military treatment facility and if one is not available then they refer to a facility contracted with the MHS network.

²²Military service officials told us that referrals are also made when a patient has to relocate for a permanent change of duty station during the course of ongoing medical treatment (such as mid-pregnancy). In these cases, if the patient has access to another military hospital at her new duty station, her medical records are automatically available and accessible through the MHS electronic health records system. Some of the military services have additional processes to ensure continuity of care for beneficiaries—including pregnant women—when they relocate. For example, the Air Force requires beneficiaries to have a medical assessment prior to relocation to identify any critical health issues, such as a pregnancy. The Navy takes steps to identify medical capabilities, such as maternity and neonatal care services, available at the new duty station so that providers can address potential problems prior to relocation.

or e-mail the receiving provider, discuss the patient's health status, and schedule an appointment for the patient. In more routine care cases, such as an uncomplicated pregnancy, the referring provider is less likely to reach out to the receiving provider and more likely to instead provide the relevant contact information to the patient to make the appointment herself.

The MHS Draws on Expertise of Internal Advisory Groups and National Clinical Organizations to Select Quality Measures

According to MHS officials, the MHS selects quality measures for women's health care services based on assessments and input from advisory groups at multiple levels of the MHS, including at the department, military-service, and hospital levels. Department- and military-service-level advisory groups track clinical developments in health care and identify quality measures for the MHS and the services to use. Specifically, members of these advisory groups participate in the activities of national clinical organizations and educate their colleagues within the MHS about new developments in health-care quality assessment, including new quality measures.²³ Based in part on this participation and expertise, these members recommend quality measures to their advisory groups for consideration. Officials told us that members of hospital-level women's health advisory groups provide their perspectives about quality measures and data through regular monthly or bi-monthly meetings hosted by military-service-level clinical specialists. MHS officials explained that the selection of quality measures for women's health care services is also partly influenced by recommendations from the organizations that collect quality measure data for the MHS. For example, the National Perinatal Information Center (NPIC) periodically makes recommendations to the MHS about quality measures to add or discontinue for the quality performance reports that it generates for the MHS. According to MHS and military service and NCR officials, coordination of the selection of quality measures for women's health care

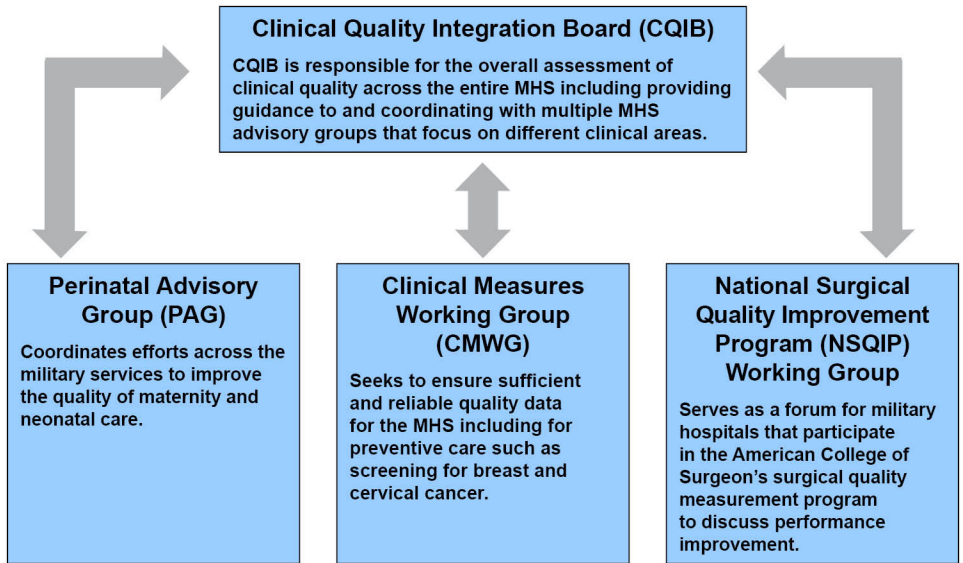
²³MHS officials told us that subject matter experts, consultants, and other military clinicians who are members of these advisory groups bring the latest knowledge about women's health and quality measures to the MHS through their involvement in national organizations that develop standards of practice and new approaches to quality measurement and improvement in clinical care. For example, the Air Force has a physician specialist in Maternal-Fetal Medicine who is a member of ACOG's Patient Safety Committee. As another example, one MHS advisory group worked with the Institute for Healthcare Improvement and other organizations to standardize definitions related to postpartum hemorrhage.

services across the military services has increased in the past several years.

MHS advisory groups related to women’s health care services that are involved in selecting quality measures are described below.

Department-level advisory groups. MHS officials reported that at the department level, there are four advisory groups involved in selecting quality measures that include measures for women’s health care services. The Clinical Quality Integration Board (CQIB) is responsible for the overall assessment of clinical quality across the entire MHS, coordinates with multiple MHS advisory groups that focus on different clinical areas, and regularly reports about quality issues to the MHS Medical Operations Group. Under the CQIB are three advisory groups that focus on quality measures that include measures for women’s health care services—the Perinatal Advisory Group (PAG), the Clinical Measures Working Group (CMWG), and the National Surgical Quality Improvement Program (NSQIP) Working Group. Figure 2 depicts these advisory groups. Each of these groups has representatives from the military services and formally reports to the CQIB on an annual or biannual basis.

Figure 2: Military Health System Advisory Groups with Responsibility for Quality Measures for Women’s Health Care Services as Reported by MHS Officials, as of March 2016



Source: GAO analysis of information provided by the Defense Health Agency. | GAO-16-596

Note: The PAG also reports to the Tri-Service Specialty Care Advisory Board, which supports the development of specialty care services including obstetrics across the MHS. Other groups that do not have responsibility for women's health care services-related quality measures also report to the CQIB.

MHS officials told us that each of these department-level advisory groups selects and reviews quality measures. For example, the PAG, which coordinates the MHS's efforts to improve the quality of maternity and neonatal care, annually reviews quality measures. In 2014, the PAG added two quality measures that looked at newborn complications and first-time cesarean deliveries. In addition, officials from MHS, all three services, and NCR reported that coordination of the selection of quality measures for women's health care services increased in the past several years. For example, the PAG, using coordinated efforts across the three military services and NCR, is selecting perinatal quality measures to include in a "dashboard" that will be used throughout all domestic military hospitals. The dashboard is intended to provide more timely quality information to providers during a patient's hospital stay. MHS officials said that the CMWG and NSQIP Working Group have similar processes focused on broader clinical topics, of which women's health care services are a subset.

Military-service-level advisory groups. Each of the three military services reported one or more advisory groups or offices responsible for advising their respective service about women's health issues, including those associated with the quality of care and measures.²⁴ These groups are composed of, or collaborate with, military clinicians and experts in women's health care, some of whom are officially appointed as subject matter experts (or consultants), in clinical areas related to women's health care services, such as obstetrics and gynecology, certified nurse midwifery, maternal-infant nursing, and family medicine. Military service officials explained that some members of these groups are also members of the department-level advisory groups, such as the PAG. This dual membership helps facilitate an exchange of information between the department- and military-service-level advisory groups. These individuals may recommend quality measures or tools for discussion at meetings of the military services. In addition, military service officials told us that

²⁴The NCR did not report a service-level advisory group, but reported that it works through the MHS Perinatal Advisory Group.

members of these groups communicate regularly with women’s health clinical providers at individual hospitals through such means as e-mail, memos, or conference calls, including discussion of quality data and measures. Table 8 describes these military-service-level advisory groups, as reported by MHS officials.

Table 8: Military-Service-Level Advisory Groups for Women’s Health Care Services as Reported by MHS Officials, March 2016

Military service	Description of advisory groups
Army	The Women’s Health Service Line is responsible for quality and safety data for women’s health and maternal/perinatal care. This group provides guidance to its military hospitals on issues regarding perinatal care. ^a
Navy	The Office of Women’s Health has central oversight of all women’s health-related activities within the Navy, and communicates these issues within the service and with the Defense Health Agency. ^b
Navy	The Women’s Health Continuum of Care Advisory Board serves as a forum for stakeholders involved in different aspects of women’s health care services to discuss important topics and make recommendations. Members include clinical providers from military hospitals. This board reviews clinical issues and opportunities related to women’s health care services from the Navy’s perspective and coordinates implementation of certain clinical initiatives. A subgroup of the advisory board—the Pregnancy Clinical Practice Guidelines Working Group—uses quality data to inform clinicians at the hospital level on areas for process improvement.
Air Force	The OB Optimization Working Group is a collaborative group that reviews Air Force quality and safety performance in perinatal care, and seeks to identify improvements and standardization in perinatal care. ^a The group sponsors a monthly meeting—the OB Quality Forum—for obstetrical medical directors and nursing leadership from each Air Force military hospital with inpatient obstetrics.

Source: Army, Navy, and Air Force. | GAO-16-596

Note: The National Capital Region (NCR) did not report a service level advisory group. According to MHS officials, NCR works through the MHS Perinatal Advisory Group. The NCR was created by the Defense Health Agency (DHA) in 2013 so that one entity, the National Capital Region Medical Directorate, would have oversight over all the military treatment facilities, including two hospitals, in the Washington, D.C. area.

^aPerinatal care refers to both maternity care, which includes care provided to the mother before birth, care provided during labor and delivery, and care provided after birth; and neonatal care, which is care provided to the newborn.

^bThe Department of Defense (DOD) established the DHA in October 2013, as part of a re-organization of the military health system to achieve greater integration of shared services and to coordinate some of the work of the military services’ hospitals and clinics. DHA assumed numerous functions of DOD’s medical health system.

Hospital-level advisory groups. Each military hospital also has a group or department that is responsible for the quality of women's health care services.²⁵ Navy officials told us that Navy military hospitals have a Women's Health Services Committee, and the responsibilities of this committee include reporting on quality measures to Navy's Women's Health Continuum of Care Advisory Board. Army officials said that Army hospital Perinatal Advisory Boards coordinate perinatal quality, safety, education, patient satisfaction, and outreach efforts. According to Air Force officials, in Air Force hospitals, responsibility for the quality of care is held by clinical departments, such as the Women's Health Department or the Obstetrics Department. NCR officials said that in NCR hospitals, the Obstetrics/Gynecology Department holds this responsibility. Members of these hospital-level groups participate in conference calls and meetings sponsored by their military-service-level advisory group or subject matter experts to learn about trends in clinical care and quality measurement. According to Air Force officials, these meetings also provide an opportunity for hospital staff to make recommendations about quality measures related to women's health care services.

The MHS Selected 90 Quality Measures for Women's Health Care Services in 2015 and Used Them in a Variety of Quality Improvement Activities

In 2015, the MHS selected 90 quality measures for women's health care services, which were collected across all three services and NCR. In 2015, the MHS, the military services and NCR, and military hospitals used quality data to assess performance, identify areas for quality improvement, and implement quality improvement activities, both across the MHS and within individual military hospitals.

²⁵The overall responsibility for oversight of the quality of care at individual military hospitals resides with the hospital leadership, including the executive committee of the medical staff. In addition, military hospitals have designated committees or staff that support quality of clinical services at their institutions.

In 2015, the MHS Collected Data on 90 Quality Measures for Women's Health Care Services in Military Hospitals

In 2015, the MHS collected data for 90 quality measures related to maternity, neonatal, and gynecological care.²⁶ A number of these measures were related to current issues in women's health care services, such as maternal morbidity and elective deliveries.²⁷ In addition to these 90 quality measures, the military services and NCR reported taking other steps related to quality measurement for women's health care services.

Maternity and neonatal care quality measures. Seventy-three of the 90 women's health care services quality measures that the MHS collected data on in 2015 were related to maternity or neonatal care, and included measures related to areas that had been identified nationally as being problematic, such as high rates of maternal morbidity and elective cesarean sections and low rates of breastfeeding. For example, it collected data on certain perinatal measures, which provided information on rates of elective deliveries, cesarean sections, breastfeeding, bloodstream infections in newborns, and administration of antenatal steroids.²⁸ In addition, it collected data on measures that captured various types of maternal morbidity, including measures that linked outcomes for mother and baby. For example, one measure demonstrated the possible linkage between the birth trauma experienced by babies and births obstructed by shoulder dystocia.²⁹ (See table 9 in appendix III for a summary of maternity and neonatal care quality measures collected across the MHS in 2015.)

²⁶MHS officials told us that the MHS submits data for these quality measures to contracted vendors that specialize in quality measurement. These vendors provide the MHS with periodic reports—monthly, quarterly, or semiannually—on its performance on these quality measures.

²⁷Elective deliveries are cases of deliveries from 37 weeks up to 39 weeks of pregnancy, where the birth is facilitated with such things as medication or surgical cesarean section without a medical indication.

²⁸The National Institutes of Health recommended that antenatal steroids be administered to pregnant women who are at risk of preterm delivery to help reduce the risk of respiratory distress syndrome, prenatal mortality, and other morbidities.

²⁹The "rate of vaginal deliveries coded with shoulder dystocia" encompasses women who delivered vaginally who had a complication of shoulder dystocia. This measure is linked with the measure "inborns with birth trauma," infants between 0-28 days old, born in the same hospital (as opposed to being transferred from another hospital), who had at least one birth trauma code.

Gynecological care quality measures. Seventeen of the 90 women's health care services quality measures that the MHS collected data on in 2015 were related to gynecological care, including surgery and preventive screening. Gynecological surgery measures included 14 measures from the National Surgical Quality Improvement Program (NSQIP), which identified the rate of different types of adverse outcomes within 30 days following surgery.³⁰ For example, NSQIP measures provided information on morbidity rates for overall gynecological surgeries, as well as for certain procedures, such as hysterectomies.³¹ In addition, in 2015, the MHS collected data on three women's health care services quality measures related to gynecological preventive screening. These measures were part of the National Committee for Quality Assurance's (NCQA) Healthcare Effectiveness Data and Information Set, commonly referred to as HEDIS, and provided information on the rates of chlamydia, breast cancer, and cervical cancer screenings provided.³² (See table 10 in appendix III for a summary of gynecological quality measures collected across the MHS in 2015.)

Additional quality measurement activities reported by the military services. The military services and NCR reported taking additional steps related to quality measurement for women's health care services. For example, in fiscal year 2015, the Navy collected data on five additional quality measures to monitor its military hospitals' compliance with the Department of Veterans Affairs and DOD Clinical Practice Guideline for Pregnancy Management. One example was measuring compliance with the "nine-visit pathway," a standard that a patient should have had nine prenatal visits (allowing for seven to eleven visits, two visits more or less

³⁰According to MHS officials, the MHS requires military hospitals to enroll and participate in NSQIP if they qualify based on their volume of cases and in 2015, 17 of 41 domestic military hospitals participated in NSQIP. In addition, they indicated that NSQIP has expanded its services to include small hospitals, and as of February 2016, the MHS was also in the process of expanding its NSQIP program to enroll smaller military hospitals. MHS officials told us that larger military hospitals collect data on 14 of the NSQIP measures, while smaller hospitals may collect data for a subset of these measures.

³¹A hysterectomy is the surgical removal of part, or all, of the uterus.

³²Chlamydia is a sexually transmitted infection.

than nine).³³ Navy officials reported that they collected and reviewed this information twice in 2015 to determine areas for improvement. In addition, Air Force officials reported that in order to allow for more timely monitoring of certain measures, Air Force hospitals collect and analyze data for five measures on a monthly basis, so that they would have the data sooner than would be available through NPIC's quarterly performance reports on these measures. Finally, officials from all three military services and NCR reported that some of their military hospitals opted to collect data on additional quality measures in 2015. Specifically, one or more military hospitals within each of the services collected data on three of the Joint Commission's Surgical Care Improvement Project measures that described the use of antibiotics for hysterectomies.

The MHS, the Military Services and NCR, and Individual Military Hospitals Used Quality Measures to Identify and Implement Quality Improvement Activities

In 2015, the MHS, the military services and NCR, and individual military hospitals used information from the data they collected through quality measurement efforts to identify and implement quality improvement activities. The MHS reviewed data on quality measures across all military hospitals and identified areas in need of improvement. The military services and NCR implemented MHS-wide quality initiatives to improve their performance on these quality measures. For example, according to MHS officials, the MHS 2015 Perinatal Quality Initiative was implemented across all military hospitals in response to a finding that postpartum hemorrhage rates were higher in military hospitals compared to certain civilian hospitals. This initiative addressed various processes of care, including training for military hospital staff, conducting postpartum hemorrhage simulation drills, and implementing quality tools.³⁴ One of the

³³Navy officials reported that this process measure provided information on whether clinical services were under-utilized. That is, if the patient did not meet the number of recommended visits, providers were prompted to look for any potential increased risks for the pregnancy.

³⁴Improved quality of care may be achieved through the use of quality tools—such as checklists—that are used by health care providers to help ensure that appropriate care processes are carried out consistently, typically involving an interdisciplinary approach to health care. Quality tools include “safety bundles,” which consist of key evidence-based practices and related resources that are targeted to improve health outcomes related to a particular clinical condition, such as hypertension in pregnant women or postpartum hemorrhage. The bundles include recommended protocols and resources that are considered important in ensuring safe care and emphasize the need for local customization and appropriate clinical judgement.

tools was a quality bundle to guide providers in responding to cases involving postpartum hemorrhage. According to MHS officials, the DHA PAG developed this tool by combining and modifying tools from ACOG's Safe Motherhood Initiative, the Council on Patient Safety in Women's Health Care, the California Maternal Quality Care Collaborative, and the Air Force. Additionally, officials reported that in February 2015, the military services and NCR implemented the use of postpartum hemorrhage prevention and management carts that contained equipment, supplies, protocols, documentation, and medication used to manage postpartum hemorrhage. The MHS also took steps (beginning in 2014) to improve the medical record coding related to postpartum hemorrhage, ensuring more standardized coding of these events across all military hospitals. After the implementation of the Perinatal Initiative and coding standardization, the MHS's average postpartum hemorrhage rate decreased from 5.03 percent in 2014 to 3.05 percent in June 2015, and was lower than the average for all of NPIC's hospital clients (3.61 percent) during the first half of 2015.³⁵

Additionally, according to military service and NCR officials, individual military hospitals often use quality measurement data to identify and carry out quality improvement activities. Officials at each of the military hospitals that we visited described a variety of such activities for women's health care services that they conducted. For example, officials at an Army hospital that we visited told us that they conducted a quality improvement project to respond to data that indicated relatively high rates of third and fourth degree lacerations in deliveries.³⁶ They conducted a review of all related medical cases, shared data with obstetricians,

³⁵In addition to the MHS-wide quality initiatives, in 2015, military service officials also reported implementing the use of other quality tools for women's health care services in their hospitals, based on the MHS's recommendation. One such tool was the AHRQ Central Line-Associated Blood Stream Infections bundle, which used evidence-based practices to help reduce the incidence of bloodstream infections that develop in patients with a central line, or catheter, inserted into a major blood vessel, a quality measure tracked by the MHS for all clinical services, including those for labor and delivery services and other women's health care services.

³⁶Perineal lacerations—vaginal tears during childbirth—occur when the baby's head is coming through the vaginal opening and is too large for the vagina to stretch around. Compared to first and second degree lacerations, third and fourth degree lacerations involve tears in additional muscles and require repair in the operating room rather than the delivery room.

provided training, and adopted a quality tool called “Safer Passages”—a tool that highlighted 13 steps to guide labor and help reduce the risk of perineal trauma, such as eliminating midline episiotomies from their clinical practices.³⁷ Hospital officials reported that these steps resulted in decreased rates of episiotomies and third and fourth degree lacerations, and increased rates of successful vaginal deliveries. Additionally, one Navy hospital that we visited implemented a “pregnancy passport” quality improvement project in 2015 in response to data on low compliance rates with the nine-visit pathway.³⁸ The passport provided detailed information for each prenatal care visit—time frames, discussion topics, medical procedures, and follow-up services needed with the radiology and pharmacy departments. One reported outcome of this effort was improved continuity of care because the hospital’s scheduling staff was able to use the primary obstetrician’s information listed on the passport when scheduling patients’ upcoming appointments, which resulted in more patients seeing the same provider throughout the course of their pregnancy.

Agency Comments

We are not making recommendations in this report. We provided DOD with a draft copy of this report for review and comment. DOD provided technical comments, which we incorporated as appropriate.

³⁷An episiotomy is a surgical incision of the perineum during childbirth to facilitate delivery.

³⁸The pregnancy passport is a two-page pamphlet that the patient carries to her prenatal visits to help her and her provider keep track of progress throughout the course of the pregnancy. MHS officials reported that other military hospitals also use a pregnancy passport.

We are sending copies of this report to the Secretary of Defense and appropriate congressional committees. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>. If you or your staff have any questions about this report, please contact me at (202) 512-7114 or draperd@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.



Debra A. Draper
Director, Health Care

Appendix I: Governance Structure of the Military Health System and Management of Military Treatment Facilities

According to a DOD report, *Military Health System Review*, the Military Health System (MHS) can be described as a federated health system, with responsibility for the delivery of care being shared among the Office of the Assistant Secretary of Defense for Health Affairs, the military services, and the Defense Health Agency (DHA).¹ The Office of the Assistant Secretary of Defense for Health Affairs reports to the Under Secretary of Defense for Personnel and Readiness, who in turn reports to the Secretary of Defense, whereas the medical commands for the Army, the Navy, and the Air Force report through their Service Chiefs to their respective Military Department Secretary and then to the Secretary of Defense.

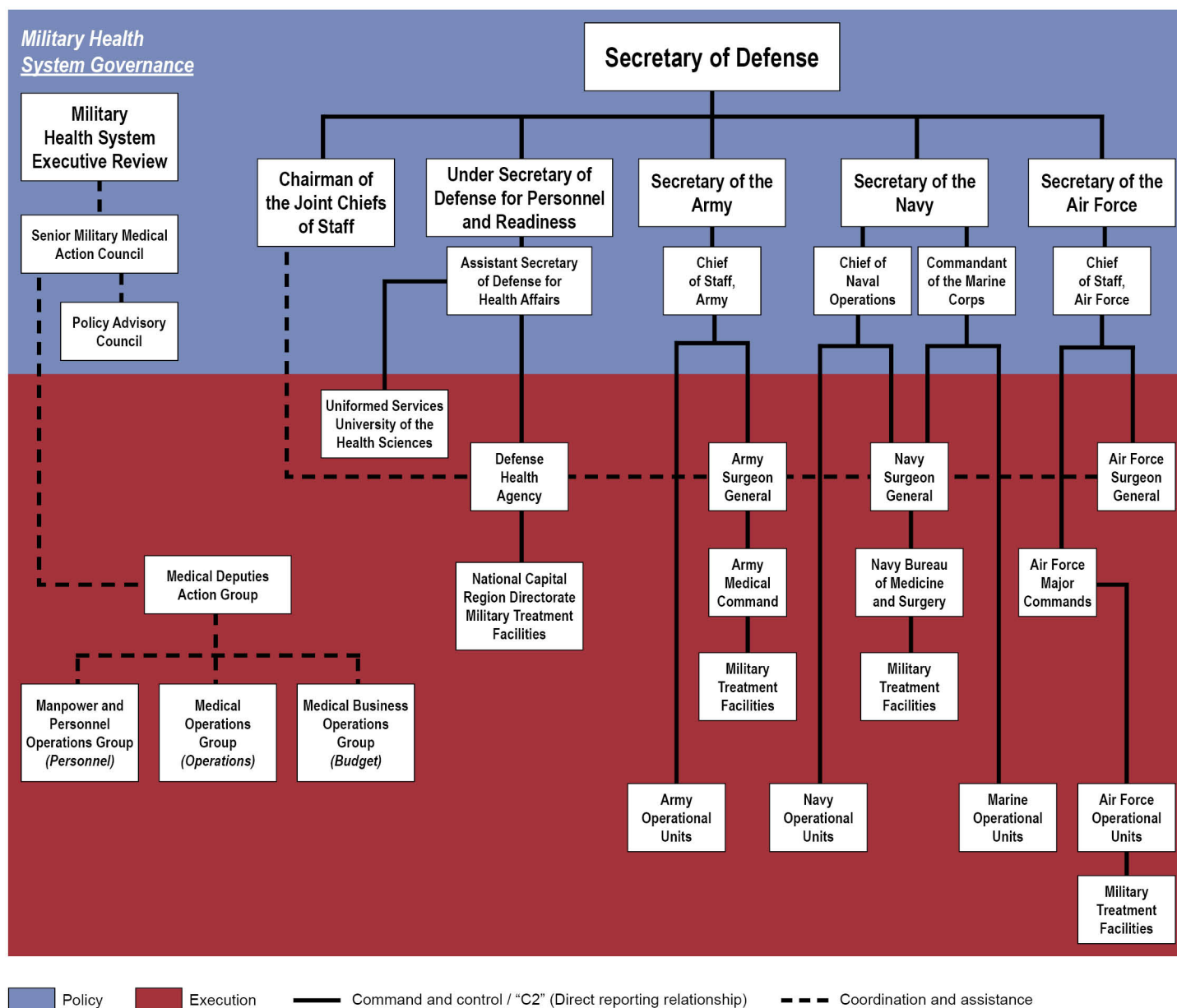
Military treatment facilities, including hospitals and clinics, are under the direction and control of the military services, which maintain the responsibility to staff, train, and equip those commands to meet mission requirements. Decision making within the MHS reflects collaborative activities by a number of bodies with representation from each service and the DHA throughout the decision-making process. (Figure 3 depicts the governance structure and management of military treatment facilities within the MHS.)

¹Department of Defense, *Final Report to the Secretary of Defense, Military Health System Review* (August 2014).

The Department of Defense (DOD) established the Defense Health Agency (DHA) in October 2013, as part of a re-organization of the military health system to achieve greater integration of key shared services and to coordinate the work of the military services' military treatment facilities. DHA assumed numerous functions of DOD's medical health system.

Appendix I: Governance Structure of the
Military Health System and Management of
Military Treatment Facilities

Figure 3: MHS's Governance Structure and Management of Military Treatment Facilities



Source: GAO analysis of data in Military Health System Review, 2014. | GAO-16-596

Appendix II: Location and Number of Beds of Domestic Military Hospitals by Military Service

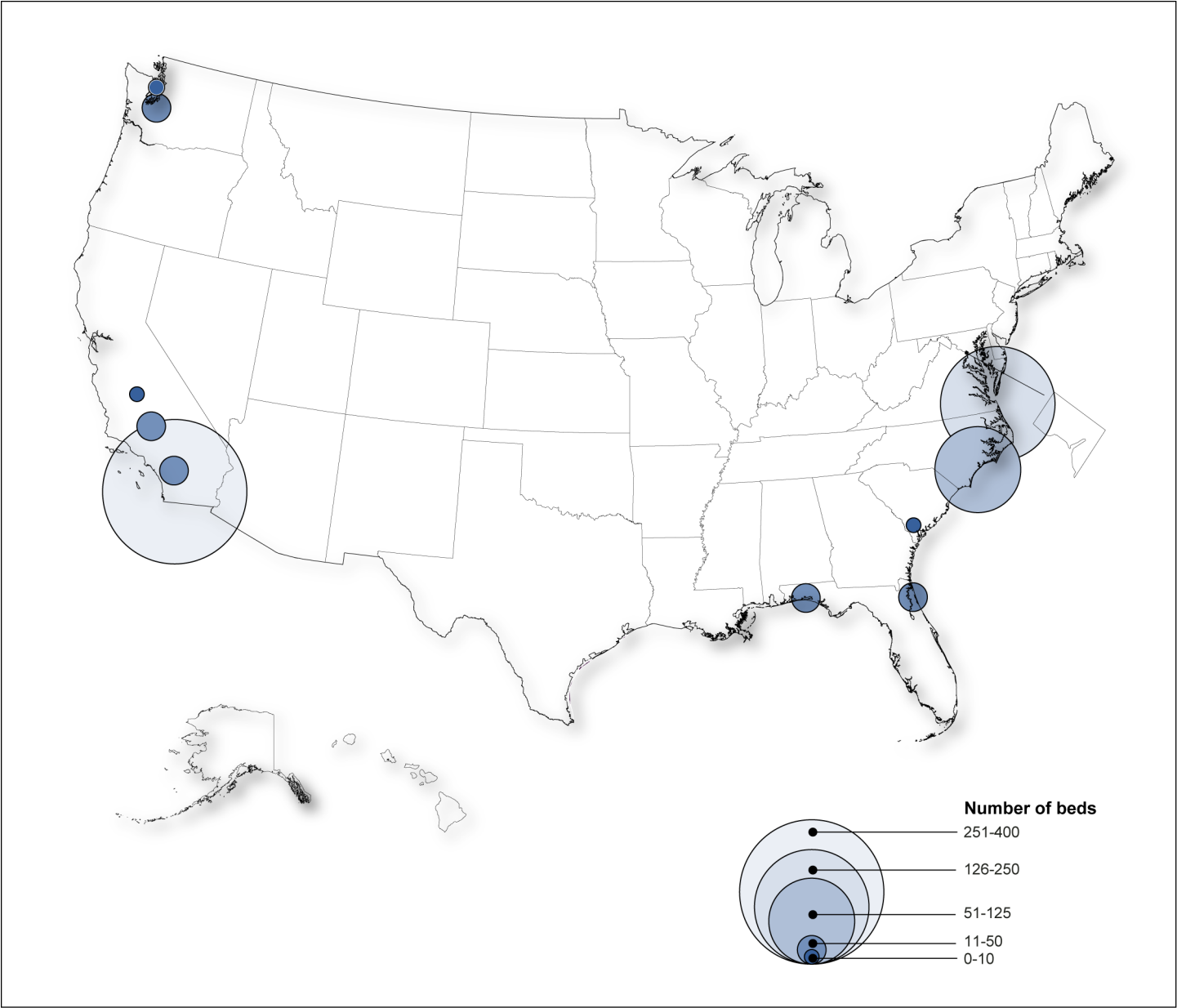
In 2015, the Military Health System's direct care system included 41 domestic military hospitals across the three military services (Army, Navy, and Air Force), and the National Capital Region (NCR). These hospitals ranged in the number of inpatient beds—a general indicator of hospital size and scope of services. The hospitals spanned the country from very populated areas, such as the Washington, D.C. region, to very remote areas, such as the Mojave Desert region in southeastern California. The four figures below show the location and number of beds of domestic military hospitals by military service.

Figure 4: Location and Number of Beds of the Army's 20 Domestic Military Hospitals, July 2015



Sources: Army (data); Map Resources (map). | GAO-16-596

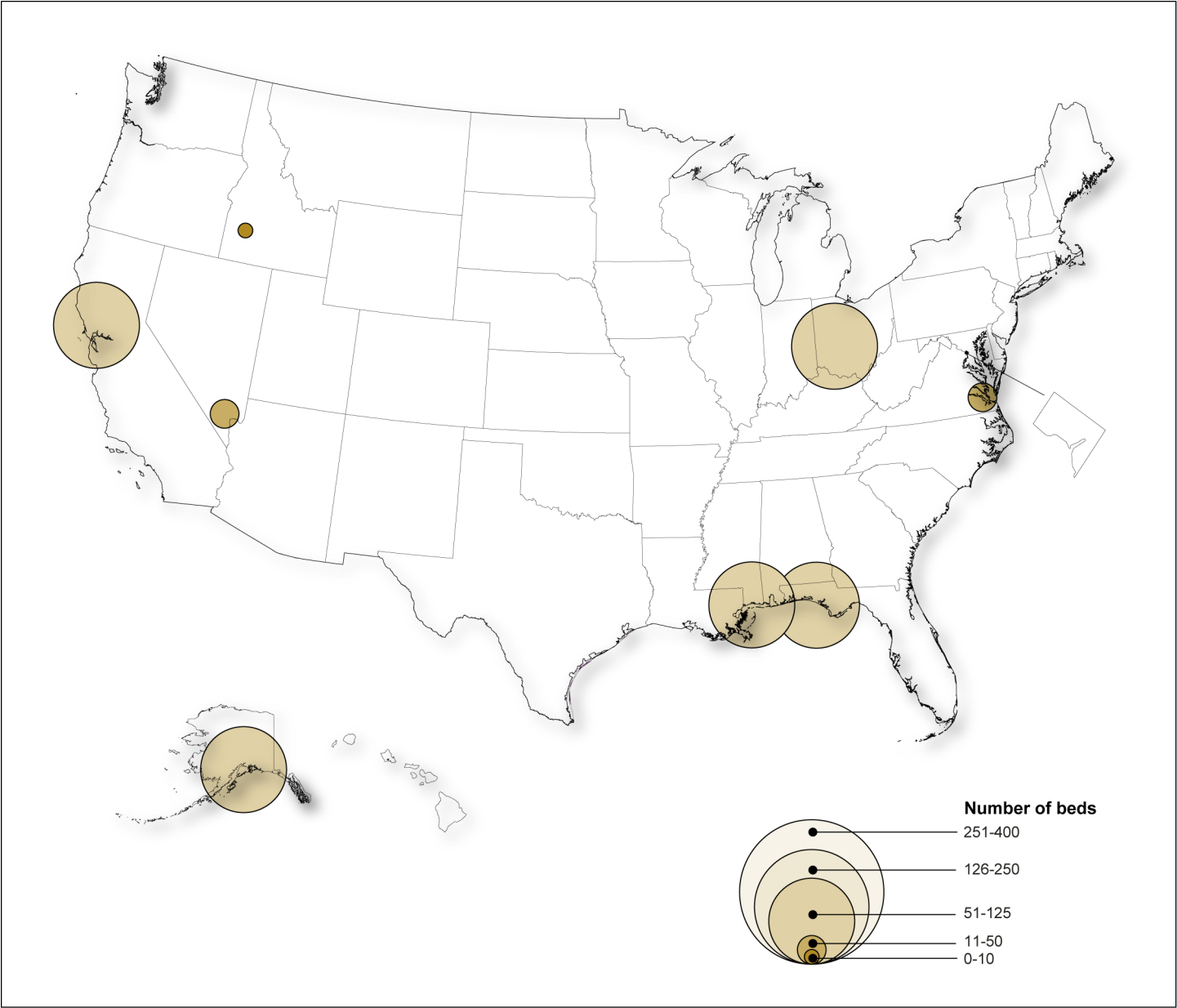
Figure 5: Location and Number of Beds of the Navy's 11 Domestic Military Hospitals, July 2015



Sources: Navy (data); Map Resources (map). | GAO-16-596

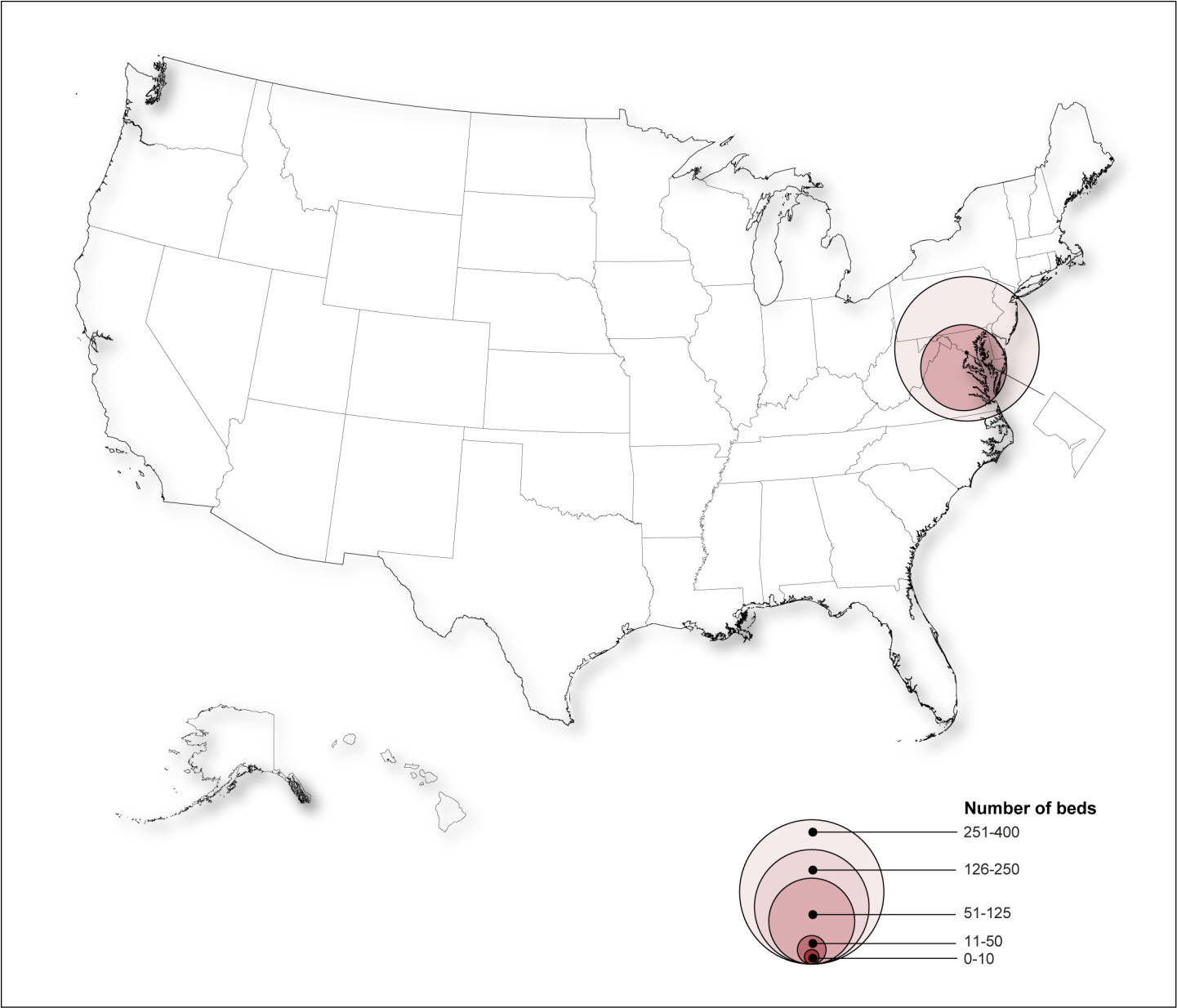
Note: These data include Naval Hospital Lemoore, which does not have any inpatient beds.

Figure 6: Location and Number of Beds of the Air Force's Eight Domestic Military Hospitals, July 2015



Sources: Air Force (data); Map Resources (map). | GAO-16-596

Figure 7: Location and Number of Beds of the National Capital Region’s (NCR) Two Domestic Military Hospitals, July 2015



Sources: NCR (data); Map Resources (map). | GAO-16-596

Note: The NCR was created in 2013 so that one entity, the National Capital Region Medical Directorate, would have oversight over all the military treatment facilities in the Washington, D.C. area, including two hospitals.

Appendix III: Quality Measures for Women's Health Care Services Collected by the Military Health System in 2015

In 2015, the Military Health System collected data for 90 quality measures related to maternity, neonatal, and gynecological care. The tables below list the 73 quality measures for maternity and neonatal care (see table 9) and 17 measures for gynecological care (see table 10), whether the measure is a process or outcome measure, and whether certain key national organizations recognize the measure.

Table 9: Seventy-three Quality Measures for Maternity and Neonatal Care Used in the Direct Care Military Health System in 2015

Quality measures, by type of care and national organization	Type of measure	Examples of key national organizations that recognize these measures				
		AHRQ ^a	IHI ^b	NQF ^c	TJC ^d	NPIC ^e
<i>Deliveries: Vaginal and cesarean (C-sections)</i>						
The Joint Commission (TJC): Perinatal Care ^f						
Rate of elective deliveries	Process	○	●	●	●	●
Rate of C-sections	Outcome	●	●	●	●	●
National Perinatal Information Center (NPIC)						
Total deliveries	Outcome	○	○	○	○	●
Delivery analysis by day of week	Process	○	○	○	○	●
Total vaginal deliveries (percent of total deliveries)	Outcome	○	○	○	○	●
Vaginal birth after C-section (VBAC) rate, Uncomplicated	Outcome	●	○	○	○	●
VBAC rate, all (percent of total deliveries), (percent of cases with prior uterine scar)	Outcome	●	○	○	○	●
Induction rate (percent of total deliveries), (percent delivered by primary or repeat C-section), (percent vaginally delivered) ^{g,h,i}	Process	○	○	○	○	●
Rate of inductions less than 37 weeks gestation with medical indication ^g	Process	○	○	○	○	●
Rate of inductions resulting in C-section ^g	Outcome	○	○	○	○	●
C-section rate, uncomplicated	Outcome	●	○	○	○	●
Repeat C-section rate (percent of total deliveries), (percent of total C-section deliveries), (percent with a prior uterine scar) ⁱ	Outcome	○	○	○	○	●
Coded reasons for C-sections (primary and repeat) ^{h,i}	Process	○	○	○	○	●
Rate of C-sections less than 37 weeks with medical indication	Process	○	○	○	○	●
Primary C-sections greater than or equal to 37 weeks with neonatal special care admission (linked mother/baby metric) ^h	Process	○	○	○	○	●
Repeat C-sections greater than or equal to 37 weeks with neonatal special care admission (linked mother/baby metric) ⁱ	Process	○	○	○	○	●
Rate of operative vaginal deliveries	Process	○	○	○	○	●

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Quality measures, by type of care and national organization	Type of measure	Examples of key national organizations that recognize these measures				
		AHRQ ^a	IHI ^b	NQF ^c	TJC ^d	NPIC ^e
Rate of forceps deliveries	Process	○	○	○	○	●
Rate of vacuum extraction deliveries	Process	○	○	○	○	●
Rate of other operative vaginal deliveries	Process	○	○	○	○	●
Incidence of episiotomy ^l	Outcome	○	○	●	○	●
Total unexpected newborn complication rate (healthy term newborn)	Outcome	○	○	●	○	●
Total inborns (singletons, twins, other multiples) ^k	Outcome	○	○	○	○	●
Inborns by birthweight category ^k	Process	○	○	○	○	●
Total deliveries linked to an inborn (% of total deliveries) (linked mother/baby metric) ^k	Outcome	○	○	○	○	●
<i>Delivery complications: mother and baby</i>						
TJC: Perinatal Care^f						
Rate of health care-associated bloodstream infections in newborns	Outcome	○	●	●	●	●
NPIC						
Neonatal bloodstream infection rate ^k	Outcome	●	○	●	○	●
Postpartum hemorrhage rate ^l	Outcome	○	○	○	○	●
Rate of inborns less than 1500 grams (inborn complications: very low birth weight) ^k	Outcome	○	○	○	○	●
Total inborn birth trauma rate ^k	Outcome	○	○	○	○	●
Birth trauma rate (injury to neonate) ^k	Outcome	●	○	○	○	●
Rate of vaginal deliveries coded with shoulder dystocia ^m	Outcome	○	○	○	○	●
Rate of vaginal deliveries with coded shoulder dystocia linked to an inborn greater than or equal to 2500 grams with birth trauma (linked mother/baby metric) ^{k,m}	Outcome	○	○	○	○	●
Severe maternal morbidity with transfusions	Outcome	○	○	○	○	●
Severe maternal morbidity excluding transfusions	Outcome	○	○	○	○	●
Severe maternal morbidity among hemorrhage cases	Outcome	○	○	○	○	●
Severe maternal morbidity (excluding transfusions) among hemorrhage cases	Outcome	○	○	○	○	●
Severe maternal morbidity among preeclampsia cases ⁿ	Outcome	○	○	○	○	●
Severe maternal morbidity (excluding transfusions) among preeclampsia cases ⁿ	Outcome	○	○	○	○	●
Rate of disruption or infection of obstetrical wound	Outcome	○	○	○	○	●
Obstetric trauma rate (vaginal delivery with instrument)	Outcome	●	○	○	○	●

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Health System in 2015**

Quality measures, by type of care and national organization	Type of measure	Examples of key national organizations that recognize these measures				
		AHRQ ^a	IHI ^b	NQF ^c	TJC ^d	NPIC ^e
Obstetric trauma rate (vaginal delivery without instrument)	Outcome	●	○	○	○	●
Third- & fourth-degree perineal laceration rate, with forceps or vacuum extractions ^o	Outcome	○	○	○	○	●
Third- & fourth-degree perineal laceration rate, without forceps or vacuum extractions ^o	Outcome	○	○	○	○	●
Anesthesia complication rate	Outcome	○	○	○	○	●
Deliveries by all patient refined (APR) diagnosis-related group (DRG) subclass (minor, moderate, major, extreme complications) ^p	Outcome	○	○	○	○	●
Inborns by APR DRG subclass (minor, moderate, major, extreme complications) ^p	Process	○	○	○	○	●
Mortality						
NPIC						
Inborn mortality greater than or equal to 500 grams (percent of total inborns) ^k	Outcome	○	○	○	○	●
Neonatal mortality rate	Outcome	●	○	○	○	●
Total neonatal mortality (percent of total neonates) ^k	Outcome	○	○	○	○	●
Inborn neonatal mortality analysis by birthweight category ^k	Outcome	○	○	○	○	●
Mortality analysis by admission status	Outcome	○	○	○	○	●
Death rate in low-mortality DRG ^p	Outcome	●	○	●	○	●
Discharges, readmissions, special care, and other						
NPIC						
Total neonatal discharges	Outcome	○	○	○	○	●
Rate of inborn discharges (percent of total neonate) ^k	Outcome	○	○	○	○	●
Total APR major diagnostic category (MDC) 14 discharges (antepartum, postpartum, other) ^p	Outcome	○	○	○	○	●
Special care discharges (percent of total neonates) ^k	Process	○	○	○	○	●
Coded reasons for inborn readmissions within 28 days post-discharge ^k	Process	○	○	○	○	●
Coded maternal conditions with neonatal special care admission (hypertension, diabetes mellitus, obesity, thyroid dysfunction) (linked mother/baby metric)	Process	○	○	○	○	●
Rate of postpartum readmissions of deliveries readmitted to delivery site (within 42 days)	Process	○	○	○	○	●
Rate of postpartum readmissions of deliveries readmitted to any hospital (within 42 days)	Process	○	○	○	○	●
Postpartum readmission rate (within 30 days post-discharge) ^l	Process	○	○	○	○	●

Appendix III: Quality Measures for Women's Health Care Services Collected by the Military Health System in 2015

Quality measures, by type of care and national organization	Type of measure	Examples of key national organizations that recognize these measures				
		AHRQ ^a	IHI ^b	NQF ^c	TJC ^d	NPIC ^e
Coded reasons for postpartum readmissions	Process	○	○	○	○	●
Total neonates transferred in (from another hospital) ^k	Process	○	○	○	○	●
Inborns transferred out to another facility within (0-3 days of birth, 4-7 days of birth, greater than 7 days of birth) ^k	Process	○	○	○	○	●
Rate of inborn readmissions to birth military hospital ^k	Process	○	○	○	○	●
Rate of inborn readmissions to any hospital ^k	Process	○	○	○	○	●
Rate of neonates with non-routine bed days (special care days) ^k	Process	○	○	○	○	●
Special care complications ^q	Outcome	○	○	○	○	●
MS MDC 14 (pregnancy, childbirth and puerperium) by MS-DRG ^p	Outcome	○	○	○	○	●
MS MDC 15 (newborns and other neonates with conditions originating in perinatal period) by MS-DRG ^p	Process	○	○	○	○	●
<i>Pre- and post-delivery care</i>						
TJC: Perinatal Care^f						
Rate of antenatal steroids ^r	Process	○	●	●	●	●
Exclusive breast milk feeding	Process	○	●	●	●	●

Legend:

- = Measure developed, endorsed, or used by the respective national organization
- = Measure not developed, endorsed, or used by the respective national organization

Source: GAO analysis of DOD, AHRQ, IHI, NQF, TJC, and NPIC documents. | GAO-16-596

Notes: "(percent of)" is used to clarify the denominator of the measure.

National organizations may focus on different aspects of quality measurement or areas of clinical care and therefore, may use different quality measures.

^aThese measures are designated by the Agency for Healthcare Research and Quality (AHRQ) as "Quality Indicators"—measures of hospital quality and safety drawn from readily available hospital inpatient administrative data.

^bThese measures are part of the Institute for Healthcare Improvement's (IHI) Perinatal Care Measurement Strategy, 2013-2014.

^cThese measures were endorsed by the National Quality Forum (NQF) as of May 2016. They were evaluated by expert committees convened by NQF, based on criteria including level of importance, scientific evidence, usability, and feasibility.

^dThese measures are part of The Joint Commission (TJC) core measure sets used for accreditation reporting.

^eThese measures are part of the National Perinatal Information Center's (NPIC) quarterly reports for the MHS that include clinical and quality indicators.

^fPerinatal care refers to both maternity care, which includes care provided to the mother before birth, care provided during labor and delivery, and care provided after birth; and neonatal care, which is care provided to the newborn.

^qInduction is the act of inducing labor, whereby labor is initiated artificially with drugs, such as oxytocin.

Appendix III: Quality Measures for Women's Health Care Services Collected by the Military Health System in 2015

^hPrimary C-sections refer to first-time C-section deliveries without a hysterectomy procedure or prior uterine scar.

ⁱRepeat C-sections refer to deliveries with a prior uterine scar.

^jAn episiotomy is a surgical incision of the perineum during childbirth to facilitate delivery.

^kFor the quality measures included in this table, NPIC defines "inborns" as infants who are in the neonatal period (0-28 days old) and born at the hospital, and "neonates" as infants in the neonatal period who are born elsewhere and transferred into the hospital.

^lPostpartum hemorrhage is excessive bleeding of the mother following birth.

^mShoulder dystocia is obstructed labor due to the baby's impacted shoulders.

ⁿPre-eclampsia is a condition of hypertension occurring in pregnancy, typically accompanied by edema (excessive accumulation of serous fluid in tissue spaces or body cavity) and proteinuria (excessive amounts of protein in urine).

^oPerineal lacerations—vaginal tears during childbirth—occur when the baby's head is coming through the vaginal opening and is too large for the vagina to stretch around. Compared to first and second degree lacerations, third and fourth degree lacerations involve tears in additional muscles and require repair in the operating room rather than the delivery room.

^pAll patient refined diagnosis-related Groups (APR-DRG) is a version of the DRG that incorporates the subclasses for severity of illness and represents the non-Medicare population, such as pediatric patients. Medicare severity diagnosis-related groups (MS-DRG) is used to account for severity of illness and resource consumption for Medicare beneficiaries.

^qAccording to NPIC, special care complications include complications such as intraventricular hemorrhage, infection, respiratory distress syndrome, transitory distress syndrome, and others.

^rThe National Institutes of Health recommended that antenatal steroids be administered to pregnant women who are at risk of preterm delivery to help reduce the risk of respiratory distress syndrome, prenatal mortality, and other morbidities.

Table 10: Seventeen Quality Measures for Gynecological Care Used in the Direct Care Military Health System in 2015

Quality measures, by type of care and national organization	Examples of key national organizations that recognize these measures			
	Type of measure	ACS ^a	NCQA ^b	NQF ^c
<i>Gynecological surgery</i>				
American College of Surgeons (ACS): National Surgical Quality Improvement Program (NSQIP)				
<i>Incidences following all gynecological surgeries:</i>				
Overall morbidity rate	Outcome	●	○	○
Urinary tract infection (UTI) rate	Outcome	●	○	●
Surgical site infection (SSI) rate	Outcome	●	○	○
Returns to operating room (ROR) rate	Outcome	●	○	○
<i>Incidences following all hysterectomies and myomectomies:^d</i>				
Mortality rate	Outcome	●	○	○
Morbidity rate	Outcome	●	○	○
Pneumonia rate	Outcome	●	○	○
Venous thromboembolism rate ^e	Outcome	●	○	○
UTI rate	Outcome	●	○	○
SSI rate	Outcome	●	○	○

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ROR rate	Outcome	●	○	○
Readmission rate	Outcome	●	○	○
Intestinal obstruction rate	Outcome	●	○	○
Ureteral obstruction rate	Outcome	●	○	○
<i>Gynecological preventive screening</i>				
National Committee for Quality Assurance (NCQA): Healthcare Effectiveness Data and Information Set (HEDIS)				
Rate of breast cancer screening	Process	○	●	●
Rate of cervical cancer screening	Process	○	●	●
Rate of chlamydia screening in women ^f	Process	○	●	●

Legend:

- = Measure developed, endorsed, or used by the respective national organization
- = Measure not developed, endorsed, or used by the respective national organization

Source: GAO analysis of DOD, ACS, NCQA, and TJC documents. | GAO-16-596

Notes: National organizations may focus on different aspects of quality measurement or areas of clinical care, and therefore may use different quality measures.

^aThese measures are part of the American College of Surgeons' (ACS) National Surgical Quality Improvement Program, which uses measures that focus on complications or unintended events that occur within a 30-day period following hospitalization for different types of surgery—including gynecology surgery—such as morbidity, mortality, or readmission to the hospital.

^bThese measures are part of the National Committee for Quality Assurance's (NCQA) Healthcare Effectiveness Data and Information Set (commonly referred to as HEDIS), which is a widely used set of health care performance measures and includes measures of preventive services for women such as screening for breast and cervical cancer and certain sexually transmitted diseases.

^cThese measures were endorsed by the National Quality Forum (NQF) as of May 2016. They were evaluated by expert committees convened by NQF, based on criteria including level of importance, scientific evidence, usability, and feasibility.

^dHysterectomy is the surgical removal of part or all of the uterus. Myomectomy is the surgical removal of uterine fibroids—common noncancerous growths that may appear in the uterus at childbearing age—while leaving the uterus intact.

^eThromboembolism is the blocking of a blood vessel by a blood clot that is dislodged from its site of origin. Venous thromboembolism includes a blood clot in a deep vein or a blood clot in a lung.

^fChlamydia is a sexually transmitted infection.

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

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Staff Acknowledgments

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